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To : SHARON ALLEN, JPL
FROM: RALPH LORENZ, LPL

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EGS Abstract for Vienna, April, 1997

MULTI-INSTRUMENT STUDIES OF TITAN'S SURFACE FROM CASSINI

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The Cassini orbiter carries high-resolution remote sensing instruments with which to characterize the surface of Titan. These are the RADAR, the Imaging Science System (ISS) and the Visual & infrared Mapping Spectrometer (VIMS). While the radar will cover only about 25% of Titan's surface, at a resolution ~3x poorer than Magellan, the radar data will be combined with roughly Viking-quality optical mapping, and near-IR spectra. The synergy of active and passive microwave measurements with multispectral and high-resolution imaging is unique to Cassini and will be vital to understand Titan.

For example, the diffuse illumination on Titan (due to scattering by haze) makes photoclinometry and shadow-length topography from visible images difficult. Radar data may be much more effective here. On the other hand, the surface composition may be better determined by IR measurements, and contacts between surface units may need the highest spatial resolution (from ISS) to establish stratigraphy.

We will examine the contributions from the different instruments and their combination, and outline the likely distribution and resolution of Titan surface coverage. Without a scan platform, the optical instruments and the radar cannot be pointed at Titan simultaneously, so orbiter time must be shared between them during the ~40 Titan flybys to be made by Cassini. We will explore strategies for maximizing the science return given this limitation.

Submittal Information

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| 1. Ralph D. Lorenz | 2. PS 4. Titan's Atmosphere and Surface: |
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This is the abstract, which is all we have so far

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